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The Sheath Transport Observer for the Redistribution of Mass (STORM) Imager

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All of the solar wind energy that powers magnetospheric processes passes through the magnetosheath and magnetopause. Global images of the magnetosheath and magnetopause boundary layers will resolve longstanding controversies surrounding fundamental phenomena that occur at the magnetopause and provide information needed to improve operational space weather models. Recent developments showing that soft X-rays (0.15-1 keV) result from high charge state solar wind ions undergoing charge exchange recombination through collisions with exospheric neutral atoms has led to the realization that soft X-ray imaging can provide global maps of the high-density shocked solar wind within the magnetosheath and cusps, regions lying between the lower density solar wind and magnetosphere. We discuss an instrument concept called the Sheath Transport Observer for the Redistribution of Mass (STORM), an X-ray imager suitable

for simultaneously imaging the dayside magnetosheath, the magnetopause boundary layers, and the cusps.